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3	47	(multilayer adj perceptron) and dual	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:25
4	45	((multilayer adj perceptron) and dual) not ((multilayer adj perceptron) and radon)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:26



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Search

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Bernard, I.;

Document Analysis and Recognition, 1993., Proceedings of the Second International Conference on , 20-22 Oct. 1993
Pages:935 - 938

[\[Abstract\]](#) [\[PDF Full-Text \(240 KB\)\]](#) **IEEE CNF****2 High-order and multilayer perceptron initialization***Thimm, G.; Fiesler, E.;*

Neural Networks, IEEE Transactions on , Volume: 8 , Issue: 2 , March 1997
Pages:349 - 359

[\[Abstract\]](#) [\[PDF Full-Text \(300 KB\)\]](#) **IEEE JNL****3 A provably convergent dynamic training method for multi-layer perceptron networks***Andersen, T.L.; Martinez, T.R.;*

Neuroinformatics and Neurocomputers, 1995., Second International Symposium , 20-23 Sept. 1995
Pages:77 - 84

[\[Abstract\]](#) [\[PDF Full-Text \(712 KB\)\]](#) **IEEE CNF****4 Sequential classification by perceptrons and application to net pruning of multilayer perceptron***Kou-Yuan Huang;*

Neural Networks, 1994. IEEE World Congress on Computational Intelligence., IEEE International Conference on , Volume: 1 , 27 June-2 July 1994
Pages:561 - 566 vol.1

[\[Abstract\]](#) [\[PDF Full-Text \(252 KB\)\]](#) [IEEE CNF](#)

5 A multi-sensor integration method of signals in a metal cutting operation via application of multilayer perceptron neural networks

Dimia, D.E., Jr.; Lister, P.M.; Leighton, N.J.;

Artificial Neural Networks, Fifth International Conference on (Conf. Publ. No. 440) , 7-9 July 1997

Pages:306 - 311

[\[Abstract\]](#) [\[PDF Full-Text \(520 KB\)\]](#) [IEE CNF](#)

6 An algorithm for training multilayer perceptrons for data classification and function interpolation

Madhyastha, R.K.; Aazhang, B.;

Circuits and Systems I: Fundamental Theory and Applications, IEEE Transaction [see also Circuits and Systems I: Regular Papers, IEEE Transactions on] , Volume: 41 , Issue: 12 , Dec. 1994

Pages:866 - 875

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7 Multilayer perceptron based decision feedback equalisers for channels with intersymbol interference

Meyer, M.; Pfeiffer, G.;

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Pages:420 - 424

[\[Abstract\]](#) [\[PDF Full-Text \(284 KB\)\]](#) [IEE JNL](#)

8 Discriminatory software metric selection via a grid of interconnected multilayer perceptrons

Alexiuk, M.D.; Pizzi, N.J.;

Electrical and Computer Engineering, 2003. IEEE CCECE 2003. Canadian Conference on , Volume: 2 , 4-7 May 2003

Pages:1131 - 1134 vol.2

[\[Abstract\]](#) [\[PDF Full-Text \(339 KB\)\]](#) [IEEE CNF](#)

9 Construction of a multilayer perceptron for a piecewise linearly separable classification problem

von Schmidt, B.; Klawonn, F.;

IFSA World Congress and 20th NAFIPS International Conference, 2001. Joint 9th , Volume: 3 , 25-28 July 2001

Pages:1770 - 1775 vol.3

[\[Abstract\]](#) [\[PDF Full-Text \(372 KB\)\]](#) [IEEE CNF](#)

10 Initial analysis on sensitivity of multilayer perceptron

Yeung, D.S.; Wang, X.Z.;

Systems, Man, and Cybernetics, 1999. IEEE SMC '99 Conference Proceedings IEEE International Conference on , Volume: 3 , 12-15 Oct. 1999

Pages:407 - 411 vol.3

[\[Abstract\]](#) [\[PDF Full-Text \(340 KB\)\]](#) [IEEE CNF](#)

11 Multilayer perceptron based dimensionality reduction

Lotlikar, R.; Kothari, R.;

Neural Networks, 1999. IJCNN '99. International Joint Conference on , Volume 3 , 10-16 July 1999

Pages:1691 - 1695 vol.3

[\[Abstract\]](#) [\[PDF Full-Text \(344 KB\)\]](#) [IEEE CNF](#)

12 Multi-layer perceptron ensembles for pattern recognition: some experiments

Costa, M.; Filippi, E.; Pasero, E.;

Neural Networks, 1994. IEEE World Congress on Computational Intelligence., IEEE International Conference on , Volume: 7 , 27 June-2 July 1994

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[\[Abstract\]](#) [\[PDF Full-Text \(416 KB\)\]](#) [IEEE CNF](#)

13 A fast hierarchical neural network for pattern classification

Annadurai, S.; Paulpandian, T.; Balasubramaniam, A.;

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14 Map estimation and the multilayer perceptron

Yu, Q.; Apollo, S.; Manry, M.T.;

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[\[Abstract\]](#) [\[PDF Full-Text \(364 KB\)\]](#) [IEEE CNF](#)

15 Phytoplankton determination in an optically complex coastal region using a multilayer perceptron neural network

D'Alimonte, D.; Zibordi, G.;

Geoscience and Remote Sensing, IEEE Transactions on , Volume: 41 , Issue: 12 , Dec. 2003

Pages:2861 - 2868

[\[Abstract\]](#) [\[PDF Full-Text \(1094 KB\)\]](#) [IEEE JNL](#)

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Electronics, Circuits and Systems, 2002. 9th International Conference on, Vol 3, 15-18 Sept. 2002

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2 Application of neural networks and filtered back projection to wafer defect cluster identification*Chenn-Jung Huang;*

Electronic Materials and Packaging, 2002. Proceedings of the 4th International Symposium on, 4-6 Dec. 2002

Pages:99 - 105

[Abstract] [PDF Full-Text (465 KB)] IEEE CNF

3 Stochastic approximation by neural networks using the Radon and wavelet transforms*Meir, R.; Maiorov, V.;*

Neural Networks for Signal Processing VIII, 1998. Proceedings of the 1998 IEEE Signal Processing Society Workshop, 31 Aug.-2 Sept. 1998

Pages:224 - 233

[Abstract] [PDF Full-Text (400 KB)] IEEE CNF

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-	4	((multidimensional or multi-dimensional) adj function) same model	USPAT	2003/08/08 12:22
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-	13	radon and neural and dual	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
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-	2	(((5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn.) and Radon and neural) and function and geometry	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/17 08:35
-	1	(((5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn.) and Radon and neural) and function and geometry) and train\$3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/17 08:35
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	1	(multidimensional or multi-dimensional) adj function and (multilayer adj perceptron)	USPAT	2004/05/19 22:29

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	11468	weight\$1 same train\$3	USPAT	2004/05/19 22:37
	124	(multilayer adj perceptron) and (weight\$1 same train\$3)	USPAT	2004/05/19 22:37
	123	((multilayer adj perceptron) and (weight\$1 same train\$3)) and neural	USPAT	2004/05/19 22:37
	1	5687364.pn.	USPAT	2004/06/01 12:56
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	47	(multilayer adj perceptron) and dual	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:25
	45	((multilayer adj perceptron) and dual) not ((multilayer adj perceptron) and radon)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:42
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Russ, W.R.; Stuenkel, D.O.; Valentine, J.D.; Gross, K.C.;
Nuclear Science, IEEE Transactions on, Volume: 47, Issue: 3, June 2000
Pages:908 - 913

[\[Abstract\]](#) [\[PDF Full-Text \(336 KB\)\]](#) [IEEE JNL](#)**2 A cone-beam reconstruction algorithm using shift-variant filtering & cone-beam backprojection**

Defrise, M.; Clack, R.;
Medical Imaging, IEEE Transactions on, Volume: 13, Issue: 1, March 1994
Pages:186 - 195

[\[Abstract\]](#) [\[PDF Full-Text \(784 KB\)\]](#) [IEEE JNL](#)**3 Radometer-a portable field instrument for the rapid measurement of environmental radon and thoron**

Negro, V.C.;
Nuclear Science, IEEE Transactions on, Volume: 37, Issue: 2, April 1990
Pages:854 - 858

[\[Abstract\]](#) [\[PDF Full-Text \(532 KB\)\]](#) [IEEE JNL](#)**4 3D-reconstruction using cone-beam backprojection, the Radon transform and linogram techniques**

Axelsson-Jacobson, C.; Defrise, M.; Danielsson, P.-E.; Clack, R.; Noo, F.;
Nuclear Science Symposium and Medical Imaging Conference Record, 1995.,
IEEE, Volume: 3, 21-28 Oct. 1995
Pages:1321 - 1325 vol.3

[\[Abstract\]](#) [\[PDF Full-Text \(960 KB\)\]](#) [IEEE CNF](#)

5 Limited-angle tomography using constrained sinogram restoration
Prince, J.L.; Willsky, A.S.;

Multidimensional Signal Processing Workshop, 1989., Sixth , 6-8 Sept. 1989
Pages:210

[\[Abstract\]](#) [\[PDF Full-Text \(60 KB\)\]](#) [IEEE CNF](#)

6 A projection space map method for limited angle reconstruction

Prince, J.L.; Willsky, A.S.;

Acoustics, Speech, and Signal Processing, 1988. ICASSP-88., 1988 Internatio Conference on , 11-14 April 1988

Pages:1268 - 1271 vol.2

[\[Abstract\]](#) [\[PDF Full-Text \(556 KB\)\]](#) [IEEE CNF](#)

7 Radon transformation of time-frequency distributions for analysis of multicomponent signals

Wood, J.C.; Barry, D.T.;

Signal Processing, IEEE Transactions on [see also Acoustics, Speech, and Signal Processing, IEEE Transactions on] , Volume: 42 , Issue: 11 , Nov. 1994

Pages:3166 - 3177

[\[Abstract\]](#) [\[PDF Full-Text \(960 KB\)\]](#) [IEEE JNL](#)

8 Improved radioxenon detection techniques for use with fluid-based concentration

Russ, W.R.; Stuenkel, D.O.; Valentine, J.D.; Gross, K.C.;

Nuclear Science Symposium, 1999. Conference Record. 1999 IEEE , Volume: 1 , 24-30 Oct. 1999

Pages:504 - 509 vol.1

[\[Abstract\]](#) [\[PDF Full-Text \(460 KB\)\]](#) [IEEE CNF](#)

9 Radon transformation of time-frequency distributions for analysis of multicomponent signals

Wood, J.C.; Barry, D.T.;

Acoustics, Speech, and Signal Processing, 1992. ICASSP-92., 1992 IEEE International Conference on , Volume: 4 , 23-26 March 1992

Pages:257 - 260 vol.4

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1 [Efficient algorithms for geometric optimization](#)

Pankaj K. Agarwal, Micha Sharir

December 1998 **ACM Computing Surveys (CSUR)**, Volume 30 Issue 4

Full text available: [pdf\(577.74 KB\)](#)

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We review the recent progress in the design of efficient algorithms for various problems in geometric optimization. We present several techniques used to attack these problems, such as parametric searching, geometric alternatives to parametric searching, prune-and-search techniques for linear programming and related problems, and LP-type problems and their efficient solution. We then describe a wide range of applications of these and other techniques to numerous problems in geometric optim ...

Keywords: clustering, collision detection, linear programming, matrix searching, parametric searching, proximity problems, prune-and-search, randomized algorithms

2 [Geometric range searching](#)

Jiří Matoušek

December 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 4

Full text available: [pdf\(13.92 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)


In geometric range searching, algorithmic problems of the following type are considered. Given an n -point set P in the plane, build a data structure so that, given a query triangle R , the number of points of P lying in R can be determined quickly. Similar questions can be asked for point sets in higher dimensions, with triangles replaced by simplices or by more complicated shapes. Algorithms of this type are of crucial importance in computational geometry, as they can be used ...

Keywords: computational geometry, lower bounds in arithmetic model, partition tree, range searching

3 [Moments of inertia and graph separators](#)

Keith D. Gremban, Gary L. Miller, Shang-Hua Teng

January 1994 **Proceedings of the fifth annual ACM-SIAM symposium on Discrete algorithms**


Full text available:  pdf(1.05 MB)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**4 Multivariate regression depth**

Marshall Bern, David Eppstein

May 2000 Proceedings of the sixteenth annual symposium on Computational geometryFull text available:  pdf(284.01 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**5 Session 3: Algorithms for center and Tverberg points**

Pankaj K. Agarwal, Micha Sharir, Emo Welzl

June 2004 Proceedings of the twentieth annual symposium on Computational geometryFull text available:  pdf(195.87 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a near-quadratic algorithm for computing the center region of a set of n points in three dimensions. This is nearly tight in the worst case since the center region can have $\Omega(n^2)$ complexity. We then consider the problem of recognizing whether a given point q is a colored Tverberg point of a set of n colored points in the plane, and present the first polynomial-time algorithm for this problem.

Keywords: center points, colored Tverberg's theorem, j-facets**6 The power of geometric duality and Minkowski sums in optical computational geometry**

Y. B. Karasik, M. Sharir

July 1993 Proceedings of the ninth annual symposium on Computational geometryFull text available:  pdf(967.85 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Continuing our earlier study [12], we present optical algorithms for solving a variety of basic problems in computational geometry, each requiring only a constant number of basic optical operations. The main tools that we use are based on optical computational tricks that involve geometric duality and Minkowski sums of geometric figures.

**7 Optical computational geometry**

Y. B. Karasik, M. Sharir

July 1992 Proceedings of the eighth annual symposium on Computational geometryFull text available:  pdf(934.20 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**8 Algorithmic complexity in coding theory and the minimum distance problem**

Alexander Vardy

May 1997 Proceedings of the twenty-ninth annual ACM symposium on Theory of computingFull text available:  pdf(2.46 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**9 Disk packings and planar separators**

Daniel A. Spielman, Shang-Hua Teng

May 1996 Proceedings of the twelfth annual symposium on Computational geometryFull text available:  pdf(869.90 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

10 Session 5A: An optimal randomized algorithm for maximum Tukey depth 

Timothy M. Chan

January 2004 **Proceedings of the fifteenth annual ACM-SIAM symposium on Discrete algorithms**Full text available:  [pdf\(257.32 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

We present the first optimal algorithm to compute the maximum *Tukey depth* (also known as *location* or *halfspace depth*) for a non-degenerate point set in the plane. The algorithm is randomized and requires $O(n \log n)$ expected time for n data points. In a higher fixed dimension $d \geq 3$, the expected time bound is $O(n^{d-1})$, which is probably optimal as well. The result is obtained using an interesting variant of the author's ...

11 Advanced tutorials: Option pricing: simulation in financial engineering 

Jeremy Staum

December 2001 **Proceedings of the 33rd conference on Winter simulation**Full text available:  [pdf\(187.50 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents an overview of the use of simulation algorithms in the field of financial engineering, assuming on the part of the reader no familiarity with finance and a modest familiarity with simulation methodology, but not its specialist research literature. The focus is on the challenges specific to financial simulations and the approaches that researchers have developed to handle them, although the paper does not constitute a comprehensive survey of the research literature. It offers ...

12 AdJava: automatic distribution of Java applications 

Mohammad M. Fuad, Michael J. Oudshoorn

January 2002 **Australian Computer Science Communications , Proceedings of the twenty-fifth Australasian conference on Computer science - Volume 4**, Volume 24 Issue 1Full text available:  [pdf\(1.27 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The majority of the world's computing resources remains idle most of the time. By using this resource pool, an individual computation may be completed in a fraction of time required to run the same computation on a single machine. However, distributing a program over a number of machines proves to be a tedious and difficult job. This paper introduces a system, called AdJava, which harnesses the computing power of these under-utilized heterogeneous computers by automatically distributing the user ...

Keywords: distributed programming, software agents.**13 Posters: Sports video summarization using highlights and play-breaks** 

Dian Tjondronegoro, Yi-Ping Phoebe Chen, Binh Pham

November 2003 **Proceedings of the 5th ACM SIGMM international workshop on Multimedia information retrieval**Full text available:  [pdf\(558.70 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

To manage the massive growth of sport videos, we need to summarize the contents into a more compact and interesting representation. Unlike previous work which summarized either highlights or play scenes, we propose a unified summarization scheme which integrates both highlights and play-break scenes. For automation of the process, combination of audio and visual features provides more accurate detection. We will present fast detection algorithms of whistle and excitement to take advantage of the ...

Keywords: content analysis, video summaries

14 [Pac-bayesian generalisation error bounds for gaussian process classification](#) 

Matthias Seeger

March 2003 **The Journal of Machine Learning Research**, Volume 3Full text available:  [pdf\(487.11 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Approximate Bayesian Gaussian process (GP) classification techniques are powerful non-parametric learning methods, similar in appearance and performance to support vector machines. Based on simple probabilistic models, they render interpretable results and can be embedded in Bayesian frameworks for model selection, feature selection, etc. In this paper, by applying the PAC-Bayesian theorem of McAllester (1999a), we prove distribution-free generalisation error bounds for a wide range of approxima ...

Keywords: Bayesian learning, Gaussian processes, Gibbs classifier, Kernel machines, PAC-Bayesian framework, convex duality, generalisation error bounds, sparse approximations

15 [Face recognition: A literature survey](#) 

W. Zhao, R. Chellappa, P. J. Phillips, A. Rosenfeld

December 2003 **ACM Computing Surveys (CSUR)**, Volume 35 Issue 4Full text available:  [pdf\(4.28 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

As one of the most successful applications of image analysis and understanding, face recognition has recently received significant attention, especially during the past several years. At least two reasons account for this trend: the first is the wide range of commercial and law enforcement applications, and the second is the availability of feasible technologies after 30 years of research. Even though current machine recognition systems have reached a certain level of maturity, their success is ...

Keywords: Face recognition, person identification

16 [The subspace information criterion for infinite dimensional hypothesis spaces](#) 

Masashi Sugiyama, Klaus-Robert Müller

March 2003 **The Journal of Machine Learning Research**, Volume 3Full text available:  [pdf\(532.09 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A central problem in learning is selection of an appropriate model. This is typically done by estimating the *unknown* generalization errors of a set of models to be selected from and then choosing the model with minimal generalization error estimate. In this article, we discuss the problem of model selection and generalization error estimation in the context of kernel regression models, e.g., kernel ridge regression, kernel subset regression or Gaussian process regression. Previously, a no ...

Keywords: Gaussian processes, cross-validation, finite sample statistics, generalization error, kernel regression, model selection, reproducing kernel Hilbert space, subspace information criterion, unbiased estimators

17 [Direct volume rendering with shading via three-dimensional textures](#) 

Allen Van Gelder, Kwansik Kim

October 1996 **Proceedings of the 1996 symposium on Volume visualization**Full text available:  [pdf\(3.97 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

18 Cluster ensembles — a knowledge reuse framework for combining multiple partitions 

Alexander Strehl, Joydeep Ghosh

March 2003 **The Journal of Machine Learning Research**, Volume 3Full text available:  pdf (842.50 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces the problem of combining multiple partitionings of a set of objects into a single consolidated clustering *without* accessing the features or algorithms that determined these partitionings. We first identify several application scenarios for the resultant 'knowledge reuse' framework that we call *cluster ensembles*. The cluster ensemble problem is then formalized as a combinatorial optimization problem in terms of shared mutual information. In addition to a direct ...

Keywords: cluster analysis, clustering, consensus functions, ensemble, knowledge reuse, multi-learner systems, mutual information, partitioning, unsupervised learning

19 Fast software for box intersections 

Afra Zomorodian, Herbert Edelsbrunner

May 2000 **Proceedings of the sixteenth annual symposium on Computational geometry**Full text available:  pdf (1.28 MB)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: algorithms, box intersection, experimentation, implementation, quantification, range tree, segment tree

20 Information, technical writing, knowledge and power: a case study of NASA's Cassini project 

Mattio Valentino

February 1999 **ACM SIGDOC Asterisk Journal of Computer Documentation**, Volume 23 Issue 1Full text available:  pdf (1.36 MB)Additional Information: [full citation](#), [abstract](#), [index terms](#)

The study of technology should not limit its scope to hardware, software, applications and systems; it should also involve language, how language shapes and is shaped by information, how information becomes knowledge, and how dominant knowledge can become power, all within the complex contexts of human culture. Technology transfer, the transfer of the knowledge of technology, is mediated by language, which, paradoxically, is itself a technology. What happens, then, when one community attempts to ...

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1 [Special issue on special feature: An introduction to variable and feature selection](#)


Isabelle Guyon, André Elisseeff

 March 2003 **The Journal of Machine Learning Research**, Volume 3

 Full text available: [pdf\(862.82 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Variable and feature selection have become the focus of much research in areas of application for which datasets with tens or hundreds of thousands of variables are available. These areas include text processing of internet documents, gene expression array analysis, and combinatorial chemistry. The objective of variable selection is three-fold: improving the prediction performance of the predictors, providing faster and more cost-effective predictors, and providing a better understanding of the ...

2 [The subspace information criterion for infinite dimensional hypothesis spaces](#)


Masashi Sugiyama, Klaus-Robert Müller

 March 2003 **The Journal of Machine Learning Research**, Volume 3

 Full text available: [pdf\(632.09 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A central problem in learning is selection of an appropriate model. This is typically done by estimating the *unknown* generalization errors of a set of models to be selected from and then choosing the model with minimal generalization error estimate. In this article, we discuss the problem of model selection and generalization error estimation in the context of kernel regression models, e.g., kernel ridge regression, kernel subset regression or Gaussian process regression. Previously, a no ...

Keywords: Gaussian processes, cross-validation, finite sample statistics, generalization error, kernel regression, model selection, reproducing kernel Hilbert space, subspace information criterion, unbiased estimators

3 [Face recognition: A literature survey](#)


W. Zhao, R. Chellappa, P. J. Phillips, A. Rosenfeld

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 Full text available: [pdf\(4.28 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

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Keywords: Face recognition, person identification

4 Pac-bayesian generalisation error bounds for gaussian process classification

Matthias Seeger

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Full text available:  [pdf\(487.11 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

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Keywords: Bayesian learning, Gaussian processes, Gibbs classifier, Kernel machines, PAC-Bayesian framework, convex duality, generalisation error bounds, sparse approximations

5 Cluster ensembles ---- a knowledge reuse framework for combining multiple partitions

Alexander Strehl, Joydeep Ghosh

March 2003 **The Journal of Machine Learning Research**, Volume 3

Full text available:  [pdf\(842.50 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

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Keywords: cluster analysis, clustering, consensus functions, ensemble, knowledge reuse, multi-learner systems, mutual information, partitioning, unsupervised learning

6 Modeling II: Dual space drawing methods for cones

Rena Ding, Yan Zhang

June 2004 **Proceedings of the 2nd international conference on Computer graphics and interactive techniques in Australasia and Southe East Asia**

Full text available:  [pdf\(209.69 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Ruled surface design and its applications are widely used in CAGD (Computer Aid Geometric Design) and industrial areas. In this paper, the cone is a particular ruled surface, which is drawn by using the dual methods based on the cylindrical shape [Ding 2003] with its same base curve. The underlying principle is the conversion from cylinders to cones by application of the dual displacement methods [Sprott and Ravani 1997]. Based on the dual methods, a comprehensive study is carried out for the cr ...

Keywords: (Dual) De Casteljau algorithm, ruled surfaces, screw space

Tools and architectures for power minimization: Low-power FPGA using pre-defined dual-Vdd/dual-Vt fabrics

Fei Li, Yan Lin, Lei He, Jason Cong

February 2004 **Proceeding of the 2004 ACM/SIGDA 12th international symposium on Field programmable gate arrays**

Full text available: .pdf (242.83 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Traditional FPGAs use uniform supply voltage Vdd and uniform threshold voltage Vt. We propose to use pre-defined dual-Vdd and dual-Vt fabrics to reduce FPGA power. We design FPGA circuits with dual-Vdd/dual-Vt to effectively reduce both dynamic power and leakage power, and define dual-Vdd/dual-Vt FPGA fabrics based on the profiling of benchmark circuits. We further develop CAD algorithms including power-sensitivity based voltage assignment and simulated-annealing based placement to leverage such ...

Keywords: FPGA, dual-Vdd, dual-Vt, low power, power efficient

8 **Call-by-value is dual to call-by-name**

Philip Wadler

August 2003 **ACM SIGPLAN Notices , Proceedings of the eighth ACM SIGPLAN international conference on Functional programming**, Volume 38 Issue 9

Full text available: .pdf (200.61 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The rules of classical logic may be formulated in pairs corresponding to De Morgan duals: rules about $\&$ are dual to rules about \vee . A line of work, including that of Filinski (1989), Griffin (1990), Parigot (1992), Danos, Joinet, and Schellinx (1995), Selinger (1998,2001), and Curien and Herbelin (2000), has led to the startling conclusion that call-by-value is the de Morgan dual of call-by-name. This paper presents a dual calculus that corresponds to the classical sequent calculus of Gentzen ...

Keywords: Curry-Howard correspondence, De Morgan dual, lambda calculus, lambda mu calculus, logic, natural deduction, sequent calculus

9 **Greedy facility location algorithms analyzed using dual fitting with factor-revealing LP**

Kamal Jain, Mohammad Mahdian, Evangelos Markakis, Amin Saberi, Vijay V. Vazirani
November 2003 **Journal of the ACM (JACM)**, Volume 50 Issue 6

Full text available: .pdf (258.90 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this article, we will formalize the method of dual fitting and the idea of factor-revealing LP. This combination is used to design and analyze two greedy algorithms for the metric uncapacitated facility location problem. Their approximation factors are 1.861 and 1.61, with running times of $O(m \log m)$ and $O(n^3)$, respectively, where n is the total number of vertices and m is the number of edges in the underlying complete bipartite graph ...

Keywords: Approximation algorithms, dual-fitting method, facility location problem, primal-dual method

10 **Multi-voltage, multi-threshold design: Total power optimization by simultaneous dual-Vt allocation and device sizing in high performance microprocessors**

Tanay Karnik, Yibin Ye, James Tschanz, Liqiong Wei, Steven Burns, Venkatesh Govindarajulu, Vivek De, Shekhar Borkar

June 2002 **Proceedings of the 39th conference on Design automation**

Full text available:  pdf(268.53 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We describe various design automation solutions for design migration to a dual-Vt process technology. We include the results of a Lagrangian Relaxation based tool, iSTATS, and a heuristic iterative optimization flow. Joint dual-Vt allocation and sizing reduces total power by 10+% compared with Vt allocation alone, and by 25+% compared with pure sizing methods. The heuristic flow requires 5x larger computation runtime than iSTATS due to its iterative nature.

Keywords: Dual-Vt design, multiple threshold, optimization, sizing

11 FPGA-based systems: FPGA power reduction using configurable dual-Vdd 

Fei Li, Yan Lin, Lei He

June 2004 **Proceedings of the 41st annual conference on Design automation**

Full text available:  pdf(506.52 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Power optimization is of growing importance for FPGAs in nanometer technologies. Considering dual-Vdd technique, we show that configurable power supply is required to obtain a satisfactory performance and power tradeoff. We design FPGA circuits and logic fabrics using configurable dual-Vdd and develop the corresponding CAD flow to leverage such circuits and logic fabrics. We then carry out a highly quantitative study using area, delay and power models obtained from detailed circuit design and SP ...

Keywords: FPGA, configurable, dual-Vdd, low power, power efficient

12 Using dual approximation algorithms for scheduling problems theoretical and practical results 

Dorit S. Hochbaum, David B. Shmoys

January 1987 **Journal of the ACM (JACM)**, Volume 34 Issue 1

Full text available:  pdf(1.76 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The problem of scheduling a set of n jobs on m identical machines so as to minimize the makespan time is perhaps the most well-studied problem in the theory of approximation algorithms for NP-hard optimization problems. In this paper the strongest possible type of result for this problem, a polynomial approximation scheme, is presented. More precisely, for each ϵ , an algorithm that runs in time $O((n/\epsilon)^{1/\epsilon})$...

13 Location Discovery and Network Management: A dual-space approach to tracking and sensor management in wireless sensor networks 

Jie Liu, Patrick Cheung, Feng Zhao, Leonidas Guibas

September 2002 **Proceedings of the 1st ACM international workshop on Wireless sensor networks and applications**

Full text available:  pdf(670.62 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Wireless *ad hoc* sensor networks have the advantage of spanning a large geographical region and being able to collaboratively detect and track non-local spatio-temporal events. This paper presents a dual-space approach to event tracking and sensor resource management in sensor networks. The dual-space transformation maps a non-local phenomenon, *e.g.*, the edge of a half-plane shadow, to a single point in the dual space, and maps locations of distributed sensor nodes to a set of lines ...

Keywords: arrangements, geometric duality, resource management, sensor networks,

target tracking

14 Approximation algorithms for metric facility location and k-Median problems using the primal-dual schema and Lagrangian relaxation

Kamal Jain, Vijay V. Vazirani

March 2001 **Journal of the ACM (JACM)**, Volume 48 Issue 2

Full text available:  pdf(170.38 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present approximation algorithms for the metric uncapacitated facility location problem and the metric k-median problem achieving guarantees of 3 and 6 respectively. The distinguishing feature of our algorithms is their low running time: $O(m \log m)$ and $O(m \log m (L + \log (n)))$ respectively, where n and m are the total number of vertices and edges in the und...

Keywords: k-median problem, Lagrangian relaxation, approximation algorithms, facility location problem, linear programming

15 A linear algorithm to find a rectangular dual of a planar triangulated graph

Jayaram Bhasker, Sartaj Sahni

July 1986 **Proceedings of the 23rd ACM/IEEE conference on Design automation**

Full text available:  pdf(668.11 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We develop an $\mathcal{O}(n)$ algorithm to construct a rectangular dual of an n -vertex planar triangulated graph.

Keywords: algorithm, complexity, floor planning, planar triangulated graph, rectangular dual

16 Session 10A: Primal-dual algorithms for deterministic inventory problems

Retsef Levi, Robin Roundy, David B. Shmoys

June 2004 **Proceedings of the thirty-sixth annual ACM symposium on Theory of computing**

Full text available:  pdf(234.40 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We consider several classical models in deterministic inventory theory: the single-item lot-sizing problem, the joint replenishment problem, and the multi-stage assembly problem. These inventory models have been studied extensively, and play a fundamental role in broader planning issues, such as the management of supply chains. We shall give a novel primal-dual framework for designing algorithms for these models that significantly improve known results in several ways: the performance guarantees ...

Keywords: approximation algorithms, inventory problems, primal-dual algorithms

17 Low-power design methodology and applications utilizing dual supply voltages

Kimiyoji Usami, Mutsunori Igarashi

January 2000 **Proceedings of the 2000 conference on Asia South Pacific design automation**

Full text available:  pdf(117.58 KB)

Additional Information: [full citation](#), [references](#), [citations](#)

18 [Heterogeneous technology mapping for FPGAs with dual-port embedded memory arrays](#)

Steven J. E. Wilton

February 2000 **Proceedings of the 2000 ACM/SIGDA eighth international symposium on Field programmable gate arrays**

Full text available:  [pdf\(697.01 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

It has become clear that on-chip storage is an essential component of high-density FPGAs. These arrays were originally intended to implement storage, but recent work has shown that they can also be used to implement logic very efficiently. This previous work has only considered single-port arrays. Many current FPGAs, however, contain dual-port arrays. In this paper we present an algorithm that maps logic to these dual-port arrays. Our algorithm can either optimize area with no regard ...

19 [Improved dual network simplex](#)

Serge A. Plotkin, Éva Tardos

January 1990 **Proceedings of the first annual ACM-SIAM symposium on Discrete algorithms**

Full text available:  [pdf\(986.36 KB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

20 [A primal-dual approximation algorithm for generalized Steiner network problems](#)

David P. Williamson, Michel X. Goemans, Milena Mihail, Vijay V. Vazirani

June 1993 **Proceedings of the twenty-fifth annual ACM symposium on Theory of computing**

Full text available:  [pdf\(984.77 KB\)](#)

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Relevance scale

1 [Fast parallel discrete approximation algorithms for the radon transform](#)

Martin L. Brady, Whanki Yong

June 1992 **Proceedings of the fourth annual ACM symposium on Parallel algorithms and architectures**

Full text available: [pdf\(875.69 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)


2 [Approximating center points with iterated radon points](#)

K. L. Clarkson, David Eppstein, Gary L. Miller, Carl Sturtivant, Shang-Hua Teng

July 1993 **Proceedings of the ninth annual symposium on Computational geometry**

Full text available: [pdf\(765.09 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


We describe a practical and provably good algorithm for approximating center points in any number of dimensions. Here c is a center point of a point set P in \mathbb{R}^d if every closed halfspace containing c contains at least $P/d+1$

3 [Artificial neural network models for texture classification via the Radon transform](#)

A. D. Kulkarni, P. Byars

March 1992 **Proceedings of the 1992 ACM/SIGAPP symposium on Applied computing: technological challenges of the 1990's**

Full text available: [pdf\(446.54 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)


4 [System design methodologies and experiences: Artificial neural network implementation on a single FPGA of a pipelined on-line backpropagation](#)

Rafael Gadea, Joaquín Cerdá, Francisco Ballester, Antonio Mocholí

September 2000 **Proceedings of the 13th international symposium on System synthesis**

Full text available: [pdf\(179.87 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

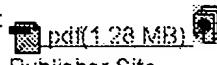

The paper describes the implementation of a systolic array for a multilayer perceptron on a Virtex XCV400 FPGA with a hardware-friendly learning algorithm. A pipelined adaptation of the on-line backpropagation algorithm is shown. Parallelism is better exploited because both forward and backward phases can be performed simultaneously. We can implement very large interconnection layers by using large Xilinx devices with embedded memories alongside the projection used in the systolic architecture. ...

5 A distributed blackboard architecture for interactive data visualization

Robert van Liere, Jan Harkes, Wim de Leeuw

October 1998 **Proceedings of the conference on Visualization '98**

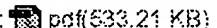
Full text available:

Additional Information: [full citation](#), [references](#), [index terms](#)[Publisher Site](#)**6 A signature for content-based image retrieval using a geometrical transform**

H. Wang, F. Guo, D. D. Feng, J. S. Jin

September 1998 **Proceedings of the sixth ACM international conference on Multimedia**

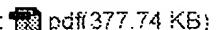
Full text available:

Additional Information: [full citation](#), [references](#), [index terms](#)**Keywords:** Radon transform, content-based image retrieval, signature**7 Necessary and sufficient conditions for hyperplane transversals**

R. Pollack, R. Wenger

June 1989 **Proceedings of the fifth annual symposium on Computational geometry**

Full text available:

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

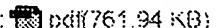
We will prove that a finite family $B = \{B_1, B_2, \dots, B_n\}$ of connected compact sets in R^d has a hyperplane transversal if and only if for some k there exists a set of points $P = \{P_1, P_2, \dots, P_k\}$

8 Parallel approximate computation of projections for animated volume rendered displays

Tung-Kuang Wu, Martin L. Brady

November 1993 **Proceedings of the 1993 symposium on Parallel rendering**

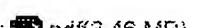
Full text available:

Additional Information: [full citation](#), [references](#), [index terms](#), [review](#)**Keywords:** approximation algorithms, massively parallel computing, parallel algorithms, volume rendering**9 Shape distributions**

Robert Osada, Thomas Funkhouser, Bernard Chazelle, David Dobkin

October 2002 **ACM Transactions on Graphics (TOG)**, Volume 21 Issue 4

Full text available:

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Measuring the similarity between 3D shapes is a fundamental problem, with applications in computer graphics, computer vision, molecular biology, and a variety of other fields. A challenging aspect of this problem is to find a suitable shape signature that can be constructed and compared quickly, while still discriminating between similar and dissimilar shapes. In this paper, we propose and analyze a method for computing shape signatures for arbitrary (possibly degenerate) 3D polygonal models. The ...

Keywords: Shape analysis, shape representation**10 Formulas for Computing Incomplete Elliptic Integrals of the First and Second Kinds**

G. E. Lee-Whiting

April 1963 **Journal of the ACM (JACM)**, Volume 10 Issue 2

Full text available:  pdf(302.76 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

11 Innovative Applications: Parallel-beam backprojection: an FPGA implementation

optimized for medical imaging

Srdjan Coric, Miriam Leeser, Eric Miller, Marc Trepanier

February 2002 **Proceedings of the 2002 ACM/SIGDA tenth international symposium on Field-programmable gate arrays**

Full text available:  pdf(690.23 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Medical image processing in general and computerized tomography (CT) in particular can benefit greatly from hardware acceleration. This application domain is marked by computationally intensive algorithms requiring the rapid processing of large amounts of data. To date, reconfigurable hardware has not been applied to this important area. For efficient implementation and maximum speedup, fixed-point implementations are required. The associated quantization errors must be carefully balanced agains ...

12 EP-X: a demonstration of semantically based search of bibliographic databases

D. Krawczak, P. Smith, S. Shute

November 1987 **Proceedings of the 10th annual international ACM SIGIR conference on Research and development in information retrieval**

Full text available:  pdf(700.42 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

EP-X (Environmental Pollution eXpert) is a prototype knowledge-based system that assists users in conducting bibliographic searches of the environmental pollution literature. This system combines artificial intelligence and human factors engineering techniques, allowing us to redesign traditional bibliographic information retrieval interfaces. The result supports semantically-based search as opposed to the typical character-string matching approach. This paper discusses a ...

13 Visualization: Rapid emission tomography reconstruction

Ken Chidlow, Torsten Möller

July 2003 **Proceedings of the 2003 Eurographics/IEEE TVCG Workshop on Volume graphics**

Full text available:  pdf(1.64 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present new implementations of the Maximum Likelihood Expectation Maximization (EM) algorithm and the related Ordered Subset EM (OSEM) algorithm. Our implementation is based on modern graphics hardware and achieves speedups of over eight times current software implementation, while reducing the RAM required to practical amounts for today's PC's. This is significant as it will make this algorithm practical for clinical use. In order to achieve a large speed up, we present bit splitting over di ...

14 Multivariate regression depth

Marshall Bern, David Eppstein

May 2000 **Proceedings of the sixteenth annual symposium on Computational geometry**

Full text available:  pdf(784.01 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

15 The power of geometric duality and Minkowski sums in optical computational geometry

Y. B. Karasik, M. Sharir

July 1993 Proceedings of the ninth annual symposium on Computational geometry

Full text available:  pdf(967.85 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Continuing our earlier study [12], we present optical algorithms for solving a variety of basic problems in computational geometry, each requiring only a constant number of basic optical operations. The main tools that we use are based on optical computational tricks that involve geometric duality and Minkowski sums of geometric figures.

16 Optical computational geometry

Y. B. Karasik, M. Sharir

July 1992 Proceedings of the eighth annual symposium on Computational geometry

Full text available:  pdf(934.20 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**17 Posters: Sports video summarization using highlights and play-breaks**

Dian Tjondronegoro, Yi-Ping Phoebe Chen, Binh Pham

November 2003 Proceedings of the 5th ACM SIGMM international workshop on Multimedia information retrieval

Full text available:  pdf(958.76 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

To manage the massive growth of sport videos, we need to summarize the contents into a more compact and interesting representation. Unlike previous work which summarized either highlights or play scenes, we propose a unified summarization scheme which integrates both highlights and play-break scenes. For automation of the process, combination of audio and visual features provides more accurate detection. We will present fast detection algorithms of whistle and excitement to take advantage of the ...

Keywords: content analysis, video summaries

18 Computer applications in health care (CAHC): Regularized B-spline network and its application to heart arrhythmia classification

Jie Zhou, Liqun Li

March 2004 Proceedings of the 2004 ACM symposium on Applied computing

Full text available:  pdf(163.10 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents an effective learning scheme that combines B-spline modeling and regularized neural networks. Essential issues of structural design and learning process are discussed. Regularization theory is leveraged to design the topological structure of the network. A training algorithm is derived for the learning of both synaptic weights and B-spline coefficients. The approach is then applied to the medical problem of heart arrhythmia detection, particularly the detection of premature v ...

Keywords: B-spline modeling, heart arrhythmia detection, regularized neural network

19 Special issue on independent components analysis: Miseg---linear and nonlinear ICA based on mutual information

Luís B. Almeida

December 2003 The Journal of Machine Learning Research, Volume 4

Full text available:  pdf(957.09 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Linear Independent Components Analysis (ICA) has become an important signal processing and data analysis technique, the typical application being blind source separation in a wide range of signals, such as biomedical, acoustical and astrophysical ones. Nonlinear ICA is

less developed, but has the potential to become at least as powerful. This paper presents MISEP, an ICA technique for linear and nonlinear mixtures, which is based on the minimization of the mutual information of the estimated comp ...

20 Models and meshes: Updating and constructing constrained delaunay and constrained regular triangulations by flips 

Jonathan Richard Shewchuk

June 2003 **Proceedings of the nineteenth annual symposium on Computational geometry**

Full text available:  [pdf\(325.97 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

I discuss algorithms based on bistellar flips for inserting and deleting constraining ($d - 1$)-facets in d -dimensional constrained Delaunay triangulations (CDTs) and weighted CDTs, also known as constrained regular triangulations. The facet insertion algorithm is likely to outperform other known algorithms on most inputs. The facet deletion algorithm is the first proposed for $d > 2$, short of recomputing the CDT from scratch. An incremental facet insertion algorithm that be ...

Keywords: bistellar flip, constrained delaunay triangulation

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21 Analysis methodology I: Simulation in financial engineering: importance sampling in derivative securities pricing
Yi Su, Michael C. Fu
December 2000 **Proceedings of the 32nd conference on Winter simulation**
Full text available: pdf(102.60 KB) Additional Information: full citation, abstract, references
We formulate the importance sampling problem as a parametric minimization problem under the original measure and use a combination of infinitesimal perturbation analysis (IPA) and stochastic approximation (SA) to minimize the variance of the price estimation. Compared to existing methods, the IPA estimator derived in this paper has significantly smaller estimation variance and doesn't depend on the form of payoff functions and differentiability of the sample path, and thus is more universally ap ...

22 Stochastic lambda calculus and monads of probability distributions
Norman Ramsey, Avi Pfeffer
January 2002 **ACM SIGPLAN Notices , Proceedings of the 29th ACM SIGPLAN-SIGACT symposium on Principles of programming languages**, Volume 37 Issue 1
Full text available: pdf(276.97 KB) Additional Information: full citation, abstract, references, citations
Probability distributions are useful for expressing the meanings of probabilistic languages, which support formal modeling of and reasoning about uncertainty. Probability distributions form a monad, and the monadic definition leads to a simple, natural semantics for a stochastic lambda calculus, as well as simple, clean implementations of common queries. But the monadic implementation of the *expectation* query can be much less efficient than current best practices in probabilistic modeling ...

23 Multiresolution techniques for interactive texture-based volume visualization
Eric LaMar, Bernd Hamann, Kenneth I. Joy
October 1999 **Proceedings of the conference on Visualization '99: celebrating ten years**
Full text available: pdf(1.84 MB) Additional Information: full citation, abstract, references, citations, index terms
We present a multiresolution technique for interactive texture-based volume visualization of very large data sets. This method uses an adaptive scheme that renders the volume in a region-of-interest at a high resolution and the volume away from this region at progressively lower resolutions. The algorithm is based on the segmentation of texture space into an octree, where the leaves of the tree define the original data and the internal nodes define lower-resolution versions. Rendering is do ...

Keywords: hardware texture, multiresolution rendering, volume visualization

24 Efficient algorithms for geometric optimization 

Pankaj K. Agarwal, Micha Sharir

December 1998 **ACM Computing Surveys (CSUR)**, Volume 30 Issue 4

Full text available:  [pdf\(677.74 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citing](#), [index terms](#)

We review the recent progress in the design of efficient algorithms for various problems in geometric optimization. We present several techniques used to attack these problems, such as parametric searching, geometric alternatives to parametric searching, prune-and-search techniques for linear programming and related problems, and LP-type problems and their efficient solution. We then describe a wide range of applications of these and other techniques to numerous problems in geometric optim ...

Keywords: clustering, collision detection, linear programming, matrix searching, parametric searching, proximity problems, prune-and-search, randomized algorithms

25 Session 3: Algorithms for center and Tverberg points 

Pankaj K. Agarwal, Micha Sharir, Emo Welzl

June 2004 **Proceedings of the twentieth annual symposium on Computational geometry**

Full text available:  [pdf\(195.87 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a near-quadratic algorithm for computing the center region of a set of n points in three dimensions. This is nearly tight in the worst case since the center region can have $\Omega(n^2)$ complexity. We then consider the problem of recognizing whether a given point q is a colored Tverberg point of a set of n colored points in the plane, and present the first polynomial-time algorithm for this problem.

Keywords: center points, colored Tverberg's theorem, j-facets

26 Modeling II: 3D object reconstruction and representation using neural networks 

Lim Wen Peng, Siti Mariyam Shamsuddin

June 2004 **Proceedings of the 2nd international conference on Computer graphics and interactive techniques in Australasia and South East Asia**

Full text available:  [pdf\(468.49 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#)

3D object reconstruction is frequently used in various fields such as product design, engineering, medical and artistic applications. Numerous reconstruction techniques and software were introduced and developed. However, the purpose of this paper is to fully integrate an adaptive artificial neural network (ANN) based method in reconstructing and representing 3D objects. This study explores the ability of neural networks in learning through experience when reconstructing an object by estimating it ...

Keywords: affined transformation, back propagation, multilayer feed-forward neural networks, object space, reconstruction, representation, third order polynomial

27 Architectures: A perspective on the future of massively parallel computing: fine-grain 

vs. coarse-grain parallel models comparison & contrast

Predrag T. Tomic

April 2004 Proceedings of the first conference on computing frontiers on Computing frontiersFull text available:  pdf(277.49 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Models, architectures and languages for *parallel computation* have been of utmost research interest in computer science and engineering for several decades. A great variety of parallel computation models has been proposed and studied, and different parallel and distributed architectures designed as some possible ways of harnessing parallelism and improving performance of the general purpose computers. *Massively parallel connectionist models* such as *artificial neural networks* (...

Keywords: cellular automata, distributed systems, massively parallel computing, multiprocessor computers, neural networks, parallel computation models

28 Whole-genome functional classification of genes by latent semantic analysis on microarray data 

See-Kiong Ng, Zexuan Zhu, Yew-Soon Ong

January 2004 Proceedings of the second conference on Asia-Pacific bioinformatics - Volume 29Full text available:  pdf(317.29 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Quantitative simultaneous monitoring of the expression levels of thousands of genes under various experimental conditions is now possible using microarray experiments. The resulting microarray data are very useful for elucidating the functional relationships among genes in the genomes. However, due to the experimental and biological nature of the data, whole-genome functional classification of genes on microarray data remains a challenging machine learning problem. In this paper, we introduce the ...

Keywords: latent semantic analysis, microarray data analysis, singular value decomposition, whole-genome gene functional classification

29 Special issue on special feature: Mips (mono layer polynomials and multi layer perceptrons) for nonlinear modeling 

Isabelle Rivals, Léon Personnaz

March 2003 The Journal of Machine Learning Research, Volume 3Full text available:  pdf(247.17 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

This paper presents a model selection procedure which stresses the importance of the classic polynomial models as tools for evaluating the complexity of a given modeling problem, and for removing non-significant input variables. If the complexity of the problem makes a neural network necessary, the selection among neural candidates can be performed in two phases. In an additive phase, the most important one, candidate neural networks with an increasing number of hidden neurons are trained. The a ...

30 AdJava: automatic distribution of Java applications 

Mohammad M. Fuad, Michael J. Oudshoorn

January 2002 Australian Computer Science Communications , Proceedings of the twenty-fifth Australasian conference on Computer science - Volume 4, Volume 24 Issue 1Full text available:  pdf(1.07 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The majority of the world's computing resources remains idle most of the time. By using this resource pool, an individual computation may be completed in a fraction of time required to run the same computation on a single machine. However, distributing a program over a number of machines proves to be a tedious and difficult job. This paper

introduces a system, called AdJava, which harnesses the computing power of these under-utilized heterogeneous computers by automatically distributing the user ...

Keywords: distributed programming, software agents.

31 Estimation of blocking probabilities in cellular networks with dynamic channel assignment □

Felisa J. Vázquez-abad, Lachlan L. H. Andrew, David Everitt

January 2002 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**,

Volume 12 Issue 1

Full text available:  [pdf\(385.62 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Blocking probabilities in cellular mobile communication networks using dynamic channel assignment are hard to compute for realistic sized systems. This computational difficulty is due to the structure of the state space, which imposes strong coupling constraints amongst components of the occupancy vector. Approximate tractable models have been proposed, which have product form stationary state distributions. However, for real channel assignment schemes, the product form is a poor approximation a ...

Keywords: Blocking probability, cellular networks, importance sampling

32 PROMS: a PRO-active Monitoring System for SS7 networks □

Ren-Hung M. Hwang, Pao-Ta M. Yu

February 2000 **International Journal of Network Management**, Volume 10 Issue 1

Full text available:  [pdf\(379.71 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we propose a PRO-active Monitoring System &ipar;PROMS) for SS7 networks, which actively monitors all signaling network management messages of SS7 networks, alerts operators when there is a potential network error, and provides intelligent diagnosis based on fuzzy logic and neural networks. Copyright © 2000 John Wiley & Sons, Ltd.

33 New Formulas for Computing Incomplete Elliptic Integrals of the First and Second Kind □

A. R. DiDonato, A. V. Hershey

October 1959 **Journal of the ACM (JACM)**, Volume 6 Issue 4

Full text available:  [pdf\(452.71 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

New series expansions are developed for computing incomplete elliptic integrals of the first and second kind when the values of the amplitude and modulus are large. The classical series, which are obtained after a binomial expansion of the integrands, are used when the values of the amplitude and modulus are small. The range of use of each series is so selected as to maintain a minimum of rounding error. A special criterion is used to determine when the binomial series should be terminated. ...

34 Generalized additive neural networks □

William J. E. Potts

August 1999 **Proceedings of the fifth ACM SIGKDD international conference on Knowledge discovery and data mining**

Full text available:  [pdf\(628.73 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

Keywords: additive models, partial residuals, predictive modeling

35 [Dense shattering and teaching dimensions for differentiable families \(extended abstract\)](#) 

A. Kowalczyk

July 1997 **Proceedings of the tenth annual conference on Computational learning theory**

Full text available:  pdf(1.51 MB)

Additional Information: [full citation](#), [references](#), [index terms](#)

36 [Video tomography: an efficient method for camerawork extraction and motion analysis](#) 

A. Akutsu, Y. Tonomura

October 1994 **Proceedings of the second ACM international conference on Multimedia**

Full text available:  pdf(747.46 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper proposes a new, efficient and practical way to extract lens zoom, camera pan and camera tilt information using modified motion analysis. The proposed method is called the Video Tomography Method (VTM), in which tomographic techniques are introduced into a motion estimation algorithm. By using the VTM, one is able to visualize motion as a spatiotemporal flow for motion analysis. The VTM is an extremely robust [resistant to noise] method for estimating camera operation due to its t ...

37 [Piercing convex sets](#) 

Noga Alon, Daniel J. Kleitman

July 1992 **Proceedings of the eighth annual symposium on Computational geometry**

Full text available:  pdf(324.38 KB)

Additional Information: [full citation](#), [references](#), [index terms](#)

38 [GMM-PAM: a genetic multilevel multicategory perceptron associative memory](#) 

Stuart Harvey Rubin

January 1990 **Proceedings of the 1990 ACM annual conference on Cooperation**

Full text available:  pdf(769.41 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

One of the principal inefficiencies in the multicategory perceptron algorithm lies in its "training algorithm". This problem has been dealt with in the past by having multiple perceptrons trained to respond to different predefined features in the input vector using back propagation. The problem with this approach is first that in general, one cannot be sure that an appropriate set of feature vectors has been defined and second, even if it were possible to do so, one cannot insur ...

39 [Performance interpolation for computer simulation models: a simulation-based approach](#) 

Darush Davani

April 1992 **Proceedings of the 1992 ACM annual conference on Communications**

Full text available:  pdf(634.17 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper proposes a new approach for interpolation in order to obtain an efficient algorithm which will help to reduce the time and computational efforts for estimating system performance at multiple settings from a simulation run at only two or more parameter settings. The algorithm properties and the validity of the estimates were examined by applying it to a multi-component reliability model with a known analytic solution. When implementation of this algorithm becomes operational under ...

40 **Algorithm 584: CUBTRI: Automatic Cubature over a Triangle**

D. P. Laurie

June 1982 **ACM Transactions on Mathematical Software (TOMS)**, Volume 8 Issue 2

Full text available:  [pdf\(461.37 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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Relevance scale 

41 Posters: Accurate web recommendations based on profile-specific url-predictor neural networks

Olfa Nasraoui, Mrudula Pavuluri

May 2004 **Proceedings of the 13th international World Wide Web conference on Alternate track papers & posters**

Full text available:  [pdf \(192.19 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a *Context Ultra-Sensitive Approach based on two-step Recommender systems (CUSA-2-step-Rec)*. Our approach relies on a committee of profile-specific neural networks. This approach provides recommendations that are accurate and fast to train because only the URLs relevant to a specific profile are used to define the architecture of each network. We compare the proposed approach with collaborative filtering showing that our approach achieves higher coverage and precision while being ...

Keywords: collaborative filtering, neural networks, web mining

42 Session 5b: Deterministic sampling and range counting in geometric data streams

Amitabha Bagchi, Amitabh Chaudhary, David Eppstein, Michael T. Goodrich

June 2004 **Proceedings of the twentieth annual symposium on Computational geometry**

Full text available:  [pdf \(143.61 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present memory-efficient deterministic algorithms for constructing ϵ -nets and ϵ -approximations of streams of geometric data. Unlike probabilistic approaches, these deterministic samples provide guaranteed bounds on their approximation factors. We show how our deterministic samples can be used to answer approximate online iceberg geometric queries on data streams. We use these techniques to approximate several robust statistics of geometric data streams, including Tukey depth, simp ...

43 Session 5A: An optimal randomized algorithm for maximum Tukey depth

Timothy M. Chan

January 2004 **Proceedings of the fifteenth annual ACM-SIAM symposium on Discrete algorithms**

Full text available:  [pdf \(257.32 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

We present the first optimal algorithm to compute the maximum *Tukey depth* (also known as *location* or *halfspace depth*) for a non-degenerate point set in the plane. The algorithm is

randomized and requires $O(n \log n)$ expected time for n data points. In a higher fixed dimension $d \geq 3$, the expected time bound is $O(n^{d-1})$, which is probably optimal as well. The result is obtained using an interesting variant of the author's ...

44 Posters & demos: Speech driven facial animation

P. Kakumanu, R. Gutierrez-Osuna, A. Esposito, R. Bryll, A. Goshtasby, O. N. Garcia
November 2001 **Proceedings of the 2001 workshop on Perceptive user interfaces**

Full text available:  [pdf\(680.00 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The results reported in this article are an integral part of a larger project aimed at achieving perceptually realistic animations, including the individualized nuances, of three-dimensional human faces driven by speech. The audiovisual system that has been developed for learning the spatio-temporal relationship between speech acoustics and facial animation is described, including video and speech processing, pattern analysis, and MPEG-4 compliant facial animation for a given speaker. In particu ...

Keywords: MPEG-4, computer vision, facial animation, lip-syncing, speech processing

45 Cluster ensembles --- a knowledge reuse framework for combining multiple partitions

Alexander Strehl, Joydeep Ghosh
March 2003 **The Journal of Machine Learning Research**, Volume 3

Full text available:  [pdf\(842.50 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces the problem of combining multiple partitionings of a set of objects into a single consolidated clustering *without* accessing the features or algorithms that determined these partitionings. We first identify several application scenarios for the resultant 'knowledge reuse' framework that we call *cluster ensembles*. The cluster ensemble problem is then formalized as a combinatorial optimization problem in terms of shared mutual information. In addition to a direct ...

Keywords: cluster analysis, clustering, consensus functions, ensemble, knowledge reuse, multi-learner systems, mutual information, partitioning, unsupervised learning

46 The subspace information criterion for infinite dimensional hypothesis spaces

Masashi Sugiyama, Klaus-Robert Müller
March 2003 **The Journal of Machine Learning Research**, Volume 3

Full text available:  [pdf\(632.09 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A central problem in learning is selection of an appropriate model. This is typically done by estimating the *unknown* generalization errors of a set of models to be selected from and then choosing the model with minimal generalization error estimate. In this article, we discuss the problem of model selection and generalization error estimation in the context of kernel regression models, e.g., kernel ridge regression, kernel subset regression or Gaussian process regression. Previously, a no ...

Keywords: Gaussian processes, cross-validation, finite sample statistics, generalization error, kernel regression, model selection, reproducing kernel Hilbert space, subspace information criterion, unbiased estimators

47 Spectroscopy of DNS update traffic

Andre Broido, Evi Nemeth, K. C. Claffy

June 2003 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 2003 ACM SIGMETRICS international conference on Measurement and modeling of computer systems**, Volume 31 Issue 1

Full text available:  pdf(169.76 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We study attempts to dynamically update DNS records for private (RFC1918) addresses, by analyzing the frequency spectrum of updates observed at an authoritative nameserver for these addresses. Using a discrete autocorrelation algorithm we found that updates series have periods of 60 or 75 minutes, which we identified as default settings of out-of-the-box Microsoft Windows 2000 and XP DNS software.

Keywords: DNS, RFC1918 addresses, root servers, spectroscopy

48 On the number of halving planes

I. Bárány, Z. Füredi, L. Lovász

June 1989 **Proceedings of the fifth annual symposium on Computational geometry**

Full text available:  pdf(484.30 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Let $S \subset \mathbb{R}^3$ be an n -set in general position. A plane containing three of the points is called a halving plane if it dissects S into two parts of equal cardinality. It is proved that the number of halving planes is at most $\binom{n}{2} \cdot 998$. As a main tool, for every set Y of n points in the plane a set $N \circ \dots$

49 Analysis methodology: Steady slate simulation analysis: importance sampling using the semi-regenerative method

James M. Calvin, Peter W. Glynn, Marvin K. Nakayama

December 2001 **Proceedings of the 33rd conference on Winter simulation**

Full text available:  pdf(169.18 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We discuss using the semi-regenerative method, importance sampling, and stratification to estimate the expected cumulative reward until hitting a fixed set of states for a discrete-time Markov chain on a countable state space. We develop a general theory for this problem and present several central limit theorems for our estimators. We also present some empirical results from applying these techniques to simulate a reliability model.

50 Analysis methodology: Efficient simulation for discrete path-dependent option pricing

James M. Calvin

December 2001 **Proceedings of the 33rd conference on Winter simulation**

Full text available:  pdf(75.16 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper we present an algorithm for simulating functions of the minimum and terminal value for a random walk with Gaussian increments. These expectations arise in connection with estimating the value of path-dependent options when prices are monitored at a discrete set of times. The expected running time of the algorithm is bounded above by a constant as the number of steps increases.

51 Hidden issues in the simulation of fixed wireless systems

Dan Avidor, Sayandev Mukherjee

March 2001 **Wireless Networks**, Volume 7 Issue 2

Full text available:  pdf(219.99 KB)

Additional Information: [full citation](#), [index terms](#)

52 [Fast software for box intersections](#)

Afra Zomorodian, Herbert Edelsbrunner

May 2000 **Proceedings of the sixteenth annual symposium on Computational geometry**Full text available:  [pdf\(1.28 MB\)](#)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: algorithms, box intersection, experimentation, implementation, quantification, range tree, segment tree

53 [Data mining techniques for optimizing inventories for electronic commerce](#)

Anjali Dhond, Amar Gupta, Sanjeev Vadhavkar

August 2000 **Proceedings of the sixth ACM SIGKDD international conference on Knowledge discovery and data mining**Full text available:  [pdf\(238.69 KB\)](#)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: data massaging, inventory optimization, temporal data mining

54 [Computing multi-colored polygonal masks in pipeline architecture and its application to automated visual inspection](#)

Jorge L. C. Sanz, Its'hak Dinstein, Dragutin Petkovic

April 1987 **Communications of the ACM**, Volume 30 Issue 4Full text available:  [pdf\(2.56 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

New techniques for computing multicolored polygonal masks for image analysis and computer vision applications are presented. The procedures do not require random access of the image memory. They are based on efficient generation of coordinate-reference images (ramps) and other simple general purpose architectural features such as look-up tables. The techniques presented are, unlike their predecessors, highly parallel and can be efficiently implemented in existing pipeline image processors. ...

55 [Rating of pattern classifications in multi-layer perceptrons: theoretical background and practical results](#)

W. Ritschel, T. Pfeifer, R. Grob

April 1994 **Proceedings of the 1994 ACM symposium on Applied computing**Full text available:  [pdf\(315.78 KB\)](#)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: neural networks, pattern recognition, rejection of patterns

56 [Fuzzy neural fusion techniques for industrial applications](#)

S. K. Halgamuge, M. Glesner

April 1994 **Proceedings of the 1994 ACM symposium on Applied computing**Full text available:  [pdf\(563.19 KB\)](#)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: Iris classification, backpropagation, cascade systems, fuzzy step net, fuzzy-neural, rule generation

57 Moments of inertia and graph separators

Keith D. Gremban, Gary L. Miller, Shang-Hua Teng

January 1994 **Proceedings of the fifth annual ACM-SIAM symposium on Discrete algorithms**Full text available:  pdf (1.05 MB)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**58 Interactive arrangement of botanical L-system models**

Joanna L. Power, A. J. Bernheim Brush, Przemyslaw Prusinkiewicz, David H. Salesin

April 1999 **Proceedings of the 1999 symposium on Interactive 3D graphics**Full text available:  pdf (846.31 KB)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: L-system, botanical modeling, interactive techniques, inverse-kinematics, optimization, plant arrangement

59 An overview of derivative estimation

Pierre L'Ecuyer

December 1991 **Proceedings of the 23rd conference on Winter simulation**Full text available:  pdf (997.35 KB)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**60 Information, technical writing, knowledge and power: a case study of NASA's Cassini project**

Mattio Valentino

February 1999 **ACM SIGDOC Asterisk Journal of Computer Documentation**, Volume 23 Issue

1

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The study of technology should not limit its scope to hardware, software, applications and systems; it should also involve language, how language shapes and is shaped by information, how information becomes knowledge, and how dominant knowledge can become power, all within the complex contexts of human culture. Technology transfer, the transfer of the knowledge of technology, is mediated by language, which, paradoxically, is itself a technology. What happens, then, when one community attempts to ...

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Christof Ebert
November 1997 **ACM SIGSOFT Software Engineering Notes, Proceedings of the 6th European conference held jointly with the 5th ACM SIGSOFT international symposium on Foundations of software engineering,**
Volume 22 Issue 6
Full text available:  pdf(1.36 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: classification, criticality prediction, data analysis, complexity, quality models, software metrics

62 Algorithmic complexity in coding theory and the minimum distance problem
Alexander Vardy
May 1997 **Proceedings of the twenty-ninth annual ACM symposium on Theory of computing**
Full text available:  pdf(2.46 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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Haleem Damerdji
December 1993 **Proceedings of the 25th conference on Winter simulation**
Full text available:  pdf(560.46 KB) Additional Information: [full citation](#), [references](#)

64 Separators for sphere-packings and nearest neighbor graphs
Gary L. Miller, Shang-Hua Teng, William Thurston, Stephen A. Vavasis
January 1997 **Journal of the ACM (JACM)**, Volume 44 Issue 1
Full text available:  pdf(661.91 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
A collection of n balls in d dimensions forms a k -ply system if no point in the space is covered by more than k balls. We show that for every k -ply system \mathcal{G} , there is a sphere S that intersects at most $O(k^2/d^{1-1/d})$ balls of \mathcal{G} and divides the remainder ...

Keywords: centerpoint, computational geometry, graph algorithms, graph separators, partitioning, point location, probabilistic method, randomized algorithm, sphere-preserving mapping

65 Rectilinear and polygonal p-piercing and p-center problems 

Micha Sharir, Emo Welzl

May 1996 **Proceedings of the twelfth annual symposium on Computational geometry**

Full text available:  pdf(1.40 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

66 Bounded boxes, Hausdorff distance, and a new proof of an interesting Helly-type theorem 

Nina Amenta

June 1994 **Proceedings of the tenth annual symposium on Computational geometry**

Full text available:  pdf(751.72 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In the first part of this paper, we reduce two geometric optimization problems to convex programming: finding the largest axis-aligned box in the intersection of a family of convex sets, and finding the translation and scaling that minimizes the Hausdorff distance between two polytopes. These reductions imply that important cases of these problems can be solved in expected linear time. In the second part of the paper, we use convex programming to give a new, short proof of an interesting He ...

67 Incremental topological flipping works for regular triangulations 

H. Edelsbrunner, N. R. Shah

July 1992 **Proceedings of the eighth annual symposium on Computational geometry**

Full text available:  pdf(1.04 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

68 Counting triangle crossings and halving planes 

Tamal K. Dey, Herbert Edelsbrunner

July 1993 **Proceedings of the ninth annual symposium on Computational geometry**

Full text available:  pdf(385.46 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Every collection of $t \geq 2n^2$ triangles with a total of n vertices in \mathbb{R}^3 has Wt^4n^6 crossing pairs. This implies that one of their edges meets Wt^3n^6

69 Helly theorems and generalized linear programming 

Nina Amenta

July 1993 **Proceedings of the ninth annual symposium on Computational geometry**

Full text available:  pdf(971.48 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Recent combinatorial algorithms for linear programming also solve certain non-linear problems. We call these Generalized Linear Programming, or GLP, problems. One way in which convexity has been generalized by mathematicians is through a collection of results called the Helly theorems. We show that every GLP problem implies a Helly theorem, and we give two paradigms for constructing a GLP problem from a Helly theorem. We give many applications, including linear expected time algorithms ...

[Competition and cooperation in analog neural networks for combinatorial optimization \(abstract\)](#)

Tao Li, L. Fang

January 1990 **Proceedings of the 1990 ACM annual conference on Cooperation**

Full text available:  [pdf\(102.43 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Error back-propagation has been used to train a multilayer perceptron to classify an individual's utterances of digits. The network has made no errors in classifying 300 new utterances, and has exhibited robust performance with gross variations in speaking style and signal-to-noise ratio. The novelty of the approach is the way in which temporal information is encoded for use by the perceptron. Specifically, the input is a pattern of decaying activations in a self-organized map of speech spe ...

71 [Compact input coding for speech recognition by neural net \(abstract\)](#)

Thomas M. English, Louis C. Boggess

January 1990 **Proceedings of the 1990 ACM annual conference on Cooperation**

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Yuval Rabani, Yuri Rabinovich, Alistair Sinclair

May 1995 **Proceedings of the twenty-seventh annual ACM symposium on Theory of computing**

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73 [Simulating quadratic dynamical systems is PSPACE-complete \(preliminary version\)](#)

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May 1994 **Proceedings of the twenty-sixth annual ACM symposium on Theory of computing**

Full text available:  [pdf\(752.02 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

74 [Geometric range searching](#)

Jiří Matoušek

December 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 4

Full text available:  [pdf\(3.92 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

In geometric range searching, algorithmic problems of the following type are considered. Given an n -point set P in the plane, build a data structure so that, given a query triangle R , the number of points of P lying in R can be determined quickly. Similar questions can be asked for point sets in higher dimensions, with triangles replaced by simplices or by more complicated shapes. Algorithms of this type are of crucial importance in computational geometry, as they can be used ...

Keywords: computational geometry, lower bounds in arithmetic model, partition tree, range searching

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Relevance scale **1 Optical computational geometry**

Y. B. Karasik, M. Sharir

July 1992 Proceedings of the eighth annual symposium on Computational geometryFull text available:  [pdf\(934.20 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**2 Multivariate regression depth**

Marshall Bern, David Eppstein

May 2000 Proceedings of the sixteenth annual symposium on Computational geometryFull text available:  [pdf\(784.01 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**3 Efficient algorithms for geometric optimization**

Pankaj K. Agarwal, Micha Sharir

December 1998 ACM Computing Surveys (CSUR), Volume 30 Issue 4Full text available:  [pdf\(577.74 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We review the recent progress in the design of efficient algorithms for various problems in geometric optimization. We present several techniques used to attack these problems, such as parametric searching, geometric alternatives to parametric searching, prune-and-search techniques for linear programming and related problems, and LP-type problems and their efficient solution. We then describe a wide range of applications of these and other techniques to numerous problems in geometric optim ...

Keywords: clustering, collision detection, linear programming, matrix searching, parametric searching, proximity problems, prune-and-search, randomized algorithms

4 The power of geometric duality and Minkowski sums in optical computational geometry

Y. B. Karasik, M. Sharir

July 1993 Proceedings of the ninth annual symposium on Computational geometryFull text available:  [pdf\(967.85 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Continuing our earlier study [12], we present optical algorithms for solving a variety of

basic problems in computational geometry, each requiring only a constant number of basic optical operations. The main tools that we use are based on optical computational tricks that involve geometric duality and Minkowski sums of geometric figures.

5 Geometric range searching

Jiří Matoušek

December 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 4

Full text available:  pdf(3.92 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

In geometric range searching, algorithmic problems of the following type are considered. Given an n -point set P in the plane, build a data structure so that, given a query triangle R , the number of points of P lying in R can be determined quickly. Similar questions can be asked for point sets in higher dimensions, with triangles replaced by simplices or by more complicated shapes. Algorithms of this type are of crucial importance in computational geometry, as they can be used ...

Keywords: computational geometry, lower bounds in arithmetic model, partition tree, range searching

6 Moments of inertia and graph separators

Keith D. Gremban, Gary L. Miller, Shang-Hua Teng

January 1994 **Proceedings of the fifth annual ACM-SIAM symposium on Discrete algorithms**

Full text available:  pdf(1.05 MB)

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7 Session 3: Algorithms for center and Tverberg points

Pankaj K. Agarwal, Micha Sharir, Emo Welzl

June 2004 **Proceedings of the twentieth annual symposium on Computational geometry**

Full text available:  pdf(195.87 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a near-quadratic algorithm for computing the center region of a set of n points in three dimensions. This is nearly tight in the worst case since the center region can have $\Omega(n^2)$ complexity. We then consider the problem of recognizing whether a given point q is a colored Tverberg point of a set of n colored points in the plane, and present the first polynomial-time algorithm for this problem.

Keywords: center points, colored Tverberg's theorem, j -facets

8 Algorithmic complexity in coding theory and the minimum distance problem

Alexander Vardy

May 1997 **Proceedings of the twenty-ninth annual ACM symposium on Theory of computing**

Full text available:  pdf(2.46 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

9 Session 5A: An optimal randomized algorithm for maximum Tukey depth

Timothy M. Chan

January 2004 **Proceedings of the fifteenth annual ACM-SIAM symposium on Discrete algorithms**

Full text available:  pdf(257.32 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

We present the first optimal algorithm to compute the maximum *Tukey depth* (also known as *location* or *halfspace depth*) for a non-degenerate point set in the plane. The algorithm is randomized and requires $O(n \log n)$ expected time for n data points. In a higher fixed dimension $d \geq 3$, the expected time bound is $O(n^{d-1})$, which is probably optimal as well. The result is obtained using an interesting variant of the author's ...

10 Disk packings and planar separators 

Daniel A. Spielman, Shang-Hua Teng

May 1996 **Proceedings of the twelfth annual symposium on Computational geometry**

Full text available:  pdf(869.90 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

11 Advanced tutorials: Option pricing: simulation in financial engineering 

Jeremy Staum

December 2001 **Proceedings of the 33rd conference on Winter simulation**

Full text available:  pdf(187.50 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents an overview of the use of simulation algorithms in the field of financial engineering, assuming on the part of the reader no familiarity with finance and a modest familiarity with simulation methodology, but not its specialist research literature. The focus is on the challenges specific to financial simulations and the approaches that researchers have developed to handle them, although the paper does not constitute a comprehensive survey of the research literature. It offers ...

12 Posters: Sports video summarization using highlights and play-breaks 

Dian Tjondronegoro, Yi-Ping Phoebe Chen, Binh Pham

November 2003 **Proceedings of the 5th ACM SIGMM international workshop on Multimedia information retrieval**

Full text available:  pdf(658.76 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

To manage the massive growth of sport videos, we need to summarize the contents into a more compact and interesting representation. Unlike previous work which summarized either highlights or play scenes, we propose a unified summarization scheme which integrates both highlights and play-break scenes. For automation of the process, combination of audio and visual features provides more accurate detection. We will present fast detection algorithms of whistle and excitement to take advantage of the ...

Keywords: content analysis, video summaries

13 AdJava: automatic distribution of Java applications 

Mohammad M. Fuad, Michael J. Oudshoorn

January 2002 **Australian Computer Science Communications , Proceedings of the twenty-fifth Australasian conference on Computer science - Volume 4,**

Volume 24 Issue 1

Full text available:  pdf(1.22 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The majority of the world's computing resources remains idle most of the time. By using this resource pool, an individual computation may be completed in a fraction of time required to run the same computation on a single machine. However, distributing a program over a number of machines proves to be a tedious and difficult job. This paper introduces a system, called AdJava, which harnesses the computing power of these under-utilized heterogeneous computers by automatically distributing the user ...

Keywords: distributed programming, software agents.

14 Direct volume rendering with shading via three-dimensional textures 

Allen Van Gelder, Kwansik Kim

October 1996 **Proceedings of the 1996 symposium on Volume visualization**

Full text available:  pdf(3.97 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

15 Information, technical writing, knowledge and power: a case study of NASA's Cassini project 

Mattio Valentino

February 1999 **ACM SIGDOC Asterisk Journal of Computer Documentation**, Volume 23 Issue 1

Full text available:  pdf(1.36 MB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

The study of technology should not limit its scope to hardware, software, applications and systems; it should also involve language, how language shapes and is shaped by information, how information becomes knowledge, and how dominant knowledge can become power, all within the complex contexts of human culture. Technology transfer, the transfer of the knowledge of technology, is mediated by language, which, paradoxically, is itself a technology. What happens, then, when one community attempts to ...

16 Fast software for box intersections 

Afra Zomorodian, Herbert Edelsbrunner

May 2000 **Proceedings of the sixteenth annual symposium on Computational geometry**

Full text available:  pdf(1.28 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: algorithms, box intersection, experimentation, implementation, quantification, range tree, segment tree

17 Incremental topological flipping works for regular triangulations 

H. Edelsbrunner, N. R. Shah

July 1992 **Proceedings of the eighth annual symposium on Computational geometry**

Full text available:  pdf(1.04 MB)

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18 Helly theorems and generalized linear programming 

Nina Amenta

July 1993 **Proceedings of the ninth annual symposium on Computational geometry**

Full text available:  pdf(971.48 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Recent combinatorial algorithms for linear programming also solve certain non-linear problems. We call these Generalized Linear Programming, or GLP, problems. One way in which convexity has been generalized by mathematicians is through a collection of results called the Helly theorems. We show that every GLP problem implies a Helly theorem, and we give two paradigms for constructing a GLP problem from a Helly theorem. We give many applications, including linear expected time algorithms ...

19 Mathematical roots of J

Roger K. W. Hui, Kenneth E. Iverson

January 1998 **ACM SIGAPL APL Quote Quad , Proceedings of the conference on Share knowledge share success**, Volume 28 Issue 4

Full text available:  pdf(636.13 KB) Additional Information: [full citation](#), [index terms](#)

20 Object structure in the Emerald system

Andrew Black, Norman Hutchinson, Eric Jul, Henry Levy

June 1986 **ACM SIGPLAN Notices , Conference proceedings on Object-oriented programming systems, languages and applications**, Volume 21 Issue 11

Full text available:  pdf(685.53 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Emerald is an object-based language for the construction of distributed applications. The principal features of Emerald include a uniform object model appropriate for programming both private local objects and shared remote objects, and a type system that permits multiple user-defined and compiler-defined implementations. Emerald objects are fully mobile and can move from node to node within the network, even during an invocation. This paper discusses the structure, programming, and ...

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1	290	706/15.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:48
2	821	706/25.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:48
3	216	706/23.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:48
4	87	706/22.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:48
-	36	((multidimensional or multi-dimensional) adj function) and model	USPAT	2004/08/23 14:18
-	1	((((multidimensional or multi-dimensional) adj function) and model) and (simple adj finite adj geometry)	USPAT	2003/08/08 12:00
-	2	simple adj finite adj geometry	USPAT	2003/08/08 12:00
-	4	((multidimensional or multi-dimensional) adj function) same model	USPAT	2003/08/08 12:22
-	55	radon and neural	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:30
-	13	radon and neural and dual	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
-	6	Radon near weight\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/16 19:01
-	124	Radon same weight\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:30
-	26	(5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
-	4	((5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn.) and Radon and neural	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/17 08:35
-	2	(((5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn.) and Radon and neural) and function and geometry	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/17 08:35

	1	((((5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn.) and Radon and neural) and function and geometry) and train\$3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/17 08:35
	29	Radon same weight\$1 same function	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
	6	(5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn. and (Radon same weight\$1 same function\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/06/01 12:54
	2	6560586.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/17 18:59
	12	(5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn. and interpolat\$4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/12/18 10:08
	7	("6560586" "5963388" "5953388" "6009142" "5504792" "5400255" "5784481").pn.	USPAT	2004/05/19 17:40
	7	("us-6560586-\$" "us-5963388-\$" "us-5953388-\$" "us-6009142-\$" "us-5504792-\$" "us-5400255-\$" "us-5784481" "us-5311600-\$ us-6424737-\$ us-6208982-\$ us-6223195-\$ us-5953452-\$ us-5414804-\$ "20010031100").did.	USPAT; US-PGPUB	2004/05/19 17:32
	7	("us-6560586-\$" "us-5963388-\$" "us-5953388-\$" "us-6009142-\$" "us-5504792-\$" "us-5400255-\$" "us-5784481-\$" "us-5311600-\$ us-6424737-\$ us-6208982-\$ us-6223195-\$ us-5953452-\$ us-5414804-\$ "20010031100").did.	USPAT; US-PGPUB	2004/05/19 17:40
	1	("us-6560586-\$" "us-5963388-\$" "us-5953388-\$" "us-6009142-\$" "us-5504792-\$" "us-5400255-\$" "us-5784481-\$" "us-5311600-\$" "us-6424737-\$" "us-6208982-\$" "us-6223195-\$" "us-5953452-\$" "us-5414804-\$" "20010031100").did.	USPAT; US-PGPUB	2004/06/01 12:55
	2	("us-6560586-\$" "us-5963388-\$" "us-5953388-\$" "us-6009142-\$" "us-5504792-\$" "us-5400255-\$" "us-5784481-\$" "us-5311600-\$" "us-6424737-\$" "us-6208982-\$" "us-6223195-\$" "us-5953452-\$" "us-5414804-\$" "20010031100").did.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/06/01 12:55
	0	("us-6560586-\$" "us-5963388-\$" "us-5953388-\$" "us-6009142-\$" "us-5504792-\$" "us-5400255-\$" "us-5784481-\$" "us-5311600-\$ us-6424737-\$ us-6208982-\$ us-6223195-\$ us-5953452-\$ us-5414804-\$).pn.	USPAT	2004/05/19 17:40
	13	("6560586" "5963388" "5953388" "6009142" "5504792" "5400255" "5784481" "5311600" "6424737" "6208982" "6223195" "5953452" "5414804").pn.	USPAT	2004/05/19 22:11
	293	multilayer adj perceptron	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11

-	2	radon and neural and dual and (multilayer adj perceptron)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
-	3	Radon same weight\$1 same function and (multilayer adj perceptron)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
-	0	(5311600, 5101270, 5654820, 5953452, 5414804, 5475726, 5491735, 5515409, 5960055, 6009142, 6061423, 6072851, "6108575").pn. and (multilayer adj perceptron)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:11
-	1	("6560586" "5963388" "5953388" "6009142" "5504792" "5400255" "5784481" "5311600" "6424737" "6208982" "6223195" "5953452" "5414804").pn. and (multilayer adj perceptron)	USPAT	2004/05/19 22:36
-	1	(multidimensional or multi-dimensional) adj function and (multilayer adj perceptron)	USPAT	2004/05/19 22:29
-	3	radon and neural and (multilayer adj perceptron)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:30
-	3	Radon same weight\$1 and (multilayer adj perceptron)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:30
-	155	(multilayer adj perceptron) and @pd<=20000124	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/05/19 22:30
-	11468	weight\$1 same train\$3	USPAT	2004/05/19 22:37
-	124	(multilayer adj perceptron) and (weight\$1 same train\$3)	USPAT	2004/05/19 22:37
-	123	((multilayer adj perceptron) and (weight\$1 same train\$3)) and neural	USPAT	2004/05/19 22:37
-	1	5687364.pn.	USPAT	2004/06/01 12:56
-	309	multilayer adj perceptron	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:19
-	3	(multilayer adj perceptron) and radon	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:46
-	47	(multilayer adj perceptron) and dual	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:25
-	45	((multilayer adj perceptron) and dual) not ((multilayer adj perceptron) and radon)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:42

-	308	radon and dual	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:42
-	15	(radon and dual) and neural	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 14:43

L Number	Hits	Search Text	DB	Time stamp
1	290	706/15.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:50
2	821	706/25.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:48
3	216	706/23.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 16:48
4	87	706/22.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 17:17
582	202	706/31.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/23 17:17